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41030 7590 10/06/2010

Xerox Corporation
c/o ORTIZ & LOPEZ, PLLC
P. O. BOX 4484
ALBUQUERQUE, NM 87196-4484

EXAMINER

KAU, STEVEN Y

ART UNIT

PAPER NUMBER

2625

DATE MAILED: 10/06/2010

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/635,381

08/05/2003

Martin S. Maltz

D/A2290

1288

TITLE OF INVENTION: METHODS AND SYSTEMS FOR CONTROLLING OUT-OF-GAMUT MEMORY AND INDEX COLORS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	01/06/2011

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

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B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

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41030 7590 10/06/2010

Xerox Corporation
c/o ORTIZ & LOPEZ, PLLC
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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/635,381 08/05/2003 Martin S. Maltz D/A2290 1288

TITLE OF INVENTION: METHODS AND SYSTEMS FOR CONTROLLING OUT-OF-GAMUT MEMORY AND INDEX COLORS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
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nonprovisional NO \$1510 \$300 \$0 \$1810 01/06/2011

EXAMINER	ART UNIT	CLASS-SUBCLASS
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KAU, STEVEN Y 2625 358-001900

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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10/635,381	08/05/2003	Martin S. Maltz	D/A2290	1288
41030	7590	10/06/2010	EXAMINER	
Xerox Corporation c/o ORTIZ & LOPEZ, PLLC P. O. BOX 4484 ALBUQUERQUE, NM 87196-4484			KAU, STEVEN Y	
			ART UNIT	PAPER NUMBER
			2625	
DATE MAILED: 10/06/2010				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1045 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1045 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability	Application No.	Applicant(s)	
	10/635,381	MALTZ ET AL.	
	Examiner	Art Unit	
	STEVEN KAU	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/31/2010.
2. ☒ The allowed claim(s) is/are 1-8 and 10-23.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

/Steven Kau/
Examiner, Art Unit 2625

/Edward L. Coles/
Supervisory Patent Examiner, Art Unit 2625

DETAILED ACTION

Examiner's Amendment

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with applicant's attorney Mr. Kevin Soules on September 24, 2010.

The application has been amended as follows:

(1) claim 1.

1. (Currently Amended) A method, in which steps are executed by an image processing device, comprising:

- selecting a memory color from a user interface;
- automatically providing a plurality of color values as input to an image processing device, wherein said image processing device is under a control of a particular dimensional order;
- dynamically determining which color value among said plurality of color values has attained a gamut limit;
- producing a Jacobian matrix associated with said color that has attained said gamut limit according to said color's nominal CMY values;
- deriving a transformation matrix; producing a gain matrix using said Jacobian matrix transforming said particular dimensional order of said color which was

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determined to have attained said gamut limit using said transformation matrix, and said gain matrix, in response to dynamically determining which color value among said plurality of color values has attained gamut limit; and thereafter automatically reducing said particular dimensional order through use of a dedicated gamut mapping function utilized to determine surface points and axes, thereby allowing for an improved estimate of said color based on said reduced dimensional order, thereby providing improved control for colors that are located external to said gamut and maintaining said color's hue.

(2). Claim 23.

23. (Currently Amended) A method, in which steps are executed by an image processing device, comprising:

selecting a memory color from a user interface

automatically providing a plurality of desired $L^*a^*b^*$ memory color

values as input to a transformation module;

transforming said $L^*a^*b^*$ memory color values into NDC memory color values

using a transformation function;

providing said NCD memory color values to an adder;

providing the output from said adder as input to an iterative controller which

outputs compensated CMY color values;

providing said compensated CMY color values as input to a graphical

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rendering device;

printing patches of said compensated CMY color values; providing said patches as input to a color sensor; generating measured $L^*a^*b^*$ values for said patches; providing said measured $L^*a^*b^*$ values as input to a second transformation module which transforms said $L^*a^*b^*$ values into NCD values and provides said NCD values to said adder, thereby completing a feedback loop which minimizes the error between the measured color and the desired $L^*a^*b^*$ memory color providing improved control for colors that are located external to said gamut.

Allowable Subject Matter

2. The following is an examiner's statement of reason for allowance.

The primary reasons for allowance for claims 1, 10 and 23 are the inclusion of the limitations in the amended claims.

Claim 1 is directed to a method for color out of gamut control to provide control of colors that are located external gamut and maintaining the color hue, and steps of the method claim are executed by an image processing device. Claim 10 is directed to a system which comprising a first transformation module, a feedback control loop that comprising an image processing device, a color sensor, an iterative controlled, a second transformation module for color out of gamut control. And claim 23 is directed to a method for color out of gamut control utilizing transformation module, added, iterative

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controller, printing patches of compensated device color values in a feedback loop function to improve the control for colors that are located outside of a gamut. Claims 2-8 are dependent claims to claim 1 and claims 11-22 are the dependent claims to claim 10.

Claim 1 identifies the following distinct features, "producing a Jacobian matrix associated with said color that has attained said gamut limit according to said color's nominal CMY values; a transformation matrix; producing a gain matrix using said Jacobian matrix transforming said particular dimensional order of said color which was determined to have attained said gamut limit using said transformation matrix, and said gain matrix, in response to dynamically determining which color value among said plurality of color values has attained gamut limit; and thereafter automatically reducing said particular dimensional order through use of a dedicated gamut mapping function utilized to determine surface points and axes, thereby allowing for an improved estimate of said color based on said reduced dimensional order".

Claim 10 identifies the following distinct features, "an image processing device for producing a compensated CMY printed value corresponding to said desired NCD memory color value, wherein said image processing device is under a control of a particular dimensional order; a color sensor for measuring said compensated CMY printed value and outputting a corresponding measured $L^*a^*b^*$ value, thereby dynamically determining which color value among said plurality of color values has attained a gamut limit; an iterative controller for reducing error associated with said desired NCD memory color by comparing said measured NCD value against said desired NCD memory color value, converting said measured NCD value to said

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compensated CMY printed value, and providing said compensated CMY printed value to said image processing device; a second transformation module for inputting said measured $L^*a^*b^*$ value from said color sensor and outputting a measured NCD value corresponding to said measured $L^*a^*b^*$ value thereby automatically reducing said particular dimensional order based on determining which color value among said plurality of color values has attained said gamut limit; and an adder module for adding feedback obtained through said second transformation module as input to said iterative controller, thereby completing an iterative process for providing improved control for colors that are located external to said gamut”.

And claim 23 identifies the following distinct features, “providing the output from said adder as input to an iterative controller which outputs compensated CMY color values; providing said patches as input to a color sensor; generating measured $L^*a^*b^*$ values for said patches; providing said measured $L^*a^*b^*$ values as input to a second transformation module which transforms said $L^*a^*b^*$ values into NCD values and provides said NCD values to said adder”.

Prior art Shimizu et al (US 7,167,277) teaches “automatically providing a plurality of color values as input to an image processing device, wherein said image processing device is under a control of a particular dimensional order; dynamically determining which color value among said plurality of color values has attained a gamut limit;” in claim 1.

Prior art Shimizu (US 7,167,277) teaches “plurality of color values automatically provided as input to an image processing device, wherein said image processing device

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is under a control of a particular dimensional order; a color sensor for dynamically determining which color value among said plurality of color values has attained a gamut limit; an iterative controller for reducing error associated with said plurality of color values; a transformation module provided within said iterative controller for automatically reducing said particular dimensional order based on determining which color value among said plurality of color values has attained said gamut limit; and an adder module for adding feedback obtained through said transformation module, thereby providing improved control for colors that are located external to said gamut” for claim 10; and

Prior art Shimizu (US 7,167,277) teaches “automatically providing a plurality of desired $L^*a^*b^*$ memory color values as input to a transformation module; transforming said $L^*a^*b^*$ memory color values into NDC memory color values using a transformation function; providing said compensated CMY color values as input to a graphical rendering device; printing patches of said compensated CMY color values; generating measured $L^*a^*b^*$ values for said patches; providing said measured $L^*a^*b^*$ values as input to a second transformation module which transforms said $L^*a^*b^*$ values into NCD values, thereby completing a feedback loop which minimizes the error between the measured color and the desired $L^*a^*b^*$ memory color providing improved control for colors that are located external to said gamut” for claim 23.

However, references Prior art Shimizu et al (US 7,167,277) in view of Mahy (US 5,832,109) and Mestha et al (US 6,236,474) and Ohkub (US 6,229,916), either

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singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

Furthermore, the prior arts in the record, i.e. Holub (US 6,750,992), Ito (US 6,437,792), Terekhov (US 2004/0096104) either singularly or in combination, fail to anticipate or render the above underlined limitations obvious. In addition, the examiner does not find any other references anticipate or suggest in the above underlined limitations. Therefore, the invention appears as a unique and non-obviousness invention, and because of this reason, claims 1, 10 and 23, and the dependent claims 2-8 and 11-22 are allowable.

Reference Prior Arts

3. The closest prior arts in the record are Shimizu et al (US 7,167,277) in view of Mahy (US 5,832,109) and Mestha et al (US 6,236,474) and Ohkub (US 6,229,916), Holub (US 6,750,992), Ito (US 6,437,792) and Terekhov (US 2004/0096104).

Comments By Applicant

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven Kau whose telephone number is 571-270-1120 and fax number is 571-270-2120. The examiner can normally be reached on M-F, 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Coles can be reached on 571-272-7402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Steven Kau/
Examiner, Art Unit 2625
September 24, 2010

/Edward L. Coles/
Supervisory Patent Examiner, Art
Unit 2625